

## Trading technology

# Bond trading: technology finally disrupts a \$50tn market

Fixed income is being dragged into the 21st century with a shift towards electronic trading on exchanges

ROBIN WIGGLESWORTH AND JOE RENNISON - NEW YORK

Abbie has enjoyed a brilliant start to her new job as a junior fund manager at AllianceBernstein, a \$500bn investment group in New York. In her first three months she has handled thousands of bond trades worth nearly \$19bn, never complaining, messing up or even taking a break.

That's because she is an algorithm.

AllianceBernstein's latest robotic employee did initially have a problem understanding some of the niceties of her human bosses – at first Abbie was stumped by what they meant with the word “please” – but she already handles about 35 per cent of their bond trades. The asset manager, which is considering the relocation of its headquarters to Nashville, Tennessee, is optimistic that Abbie will soon be able to automate large parts of the work of its two dozen human assistant portfolio managers.

Abbie might seem unremarkable to observers who have seen a series of technological revolutions reshape the stock market. But the bond market has historically been a vast but old-fashioned corner of the financial system, with little transparency and trading often conducted by phone.

Yet a confluence of factors is now beginning to have a profound impact on the \$50tn fixed income market.

Banks complain that more onerous regulations have hamstrung their ability to play their traditional role in lubricating activity in the bond market. That has spurred efforts to explore new

ways to trade debt. The hope is that modernising the market's technological architecture can cut costs and improve its efficiency.

The “electronification” of the bigger government debt markets – such as US Treasuries or UK Gilts – is already well under way, and some experts predict that less traded markets such as corporate, municipal or emerging market debt will be the next to succumb to the march of the machines.

There is still scepticism that bonds can ever trade in a similar fashion to equities. Doubters point out that a company might only have issued one stock, but dozens of unique bonds. In fact, there are only 43,000 stocks in the world, but there are millions of bonds, each with their own legal and financial idiosyncrasies. Bigger chunks of debt are especially hard to trade without human finesse: sceptics compare it to how people might be comfortable buying a TV online, but not a house.

But if modern regulations have plunged bond trading into a funk, then modern technology has handed the finance industry the means to turn the predicament into an opportunity. Stocks may be fundamentally different from fixed income, but that does not mean the latter cannot benefit from advances in data science and artificial intelligence.

Moreover, electronification is just one facet of how bond trading is being dragged into the 21st century, with banks and investors exploring myriad ways to modernise the entire fixed income

market – as Abbie attests to.

“Before the crisis the technology available was pretty archaic. But the liquidity available was so good that we didn't care. Then 2008 happened,” says Douglas Peebles, AllianceBernstein's fixed income chief. “We want to make the market better, stronger, faster.”

## Phoning it in

When Richie Prager started on Wall Street in 1981 he had to punch trades into a Telex machine, the keys so cumbersome it felt like they were fighting back. The majority of bond deals were arranged by phone and trading floors resembled boisterous street markets.

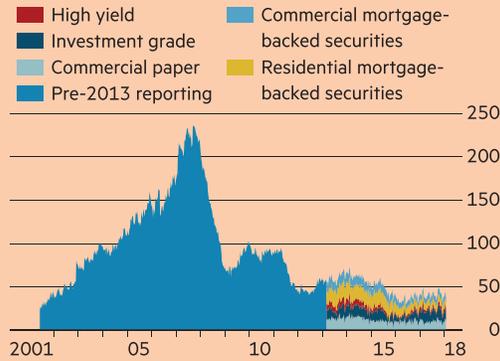
Today Mr Prager oversees trading at BlackRock, the world's biggest investment group, where quiet data scientists have replaced many bellowing traders, and workstations look more like a desk at Nasa. “The technology [change] is like night and day over the past five years,” Mr Prager says. “It's hugely exciting.”

BlackRock is one of several firms that are pouring money into technology in order to cut costs and improve the efficiency of its bond trading operations – a trend catalysed by concerns over the health of the bond market. While debt issuance has surged, traders say liquidity has deteriorated sharply in recent years, as a torrent of regulations forced banks to reduce their trading desks.

Putting precise numbers around this decline is tricky, as liquidity is an ephemeral concept. Asking a dozen

## Banks' bond holdings decline sharply ...

US primary dealers' net holdings of debt (\$bn)

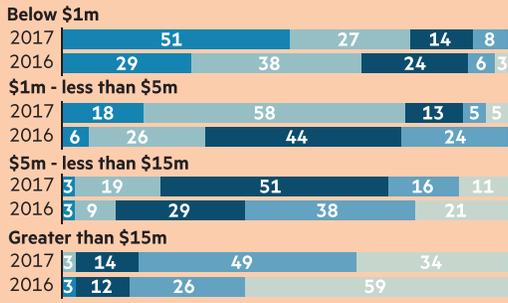


Sources: Algebris; Greenwich Associates; MarketAxess

## ... as smaller trades become easier with electronic ...

% of responses on bond trades

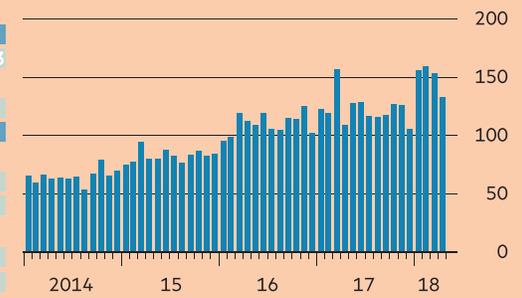
1 - Extremely easy 2 3 4 5 - Extremely difficult



Based on 39 responses in 2017 and 34 in 2016

## ... and the migration to electronic trading intensifies

Monthly volume on bonds traded on MarketAxess (\$bn)



traders will typically yield at least as many answers. But broadly speaking, liquidity is how easy it is to trade a financial asset without significantly moving its price. Most experts agree that liquidity has atrophied for bonds – especially at times of stress in the market.

That has led to a series of warnings over the years. Blackstone chief Stephen Schwarzman has argued that the “liquidity drought can exacerbate, or even trigger, the next financial crisis”, while the economist Nouriel Roubini has predicted that “market illiquidity will eventually trigger a bust and collapse”. Even regulators have voiced concerns, albeit in more cautious terms.

Thus far the doomsayers might seem like Eeyore, AA Milne’s permanently pessimistic donkey, as fixed income markets have weathered big tests without any significant dislocations. Yet even if a crisis has failed to materialise, that does not mean the bond market is in fine fettle. And a number of banks and investment groups think that part of the solution will lie in the modernisation of fixed income trading.

This has accelerated the shift towards electronic, equity-style trading on exchanges, as opposed to “over the counter” trading. The “rates” market, where the debt of major governments is traded, is already mostly electronic, and corporate debt is also beginning to migrate on to trading platforms – at least for smaller chunks of debt.

There are also signs that the traditional divide between the “dealer-to-dealer” bond market, where banks trade with each other, and the “dealer-to-client” area, where they arrange trades for other investors, is beginning to blur, with some

experts heralding the dawn of an “all-to-all” market for the biggest, most liquid bond markets.

Greenwich Associates estimates that a fifth of all investment-grade US corporate bond trades are now done electronically – almost double the volume of a decade ago. Even riskier “junk bonds” are beginning to move that way.

One of the biggest winners from this shift is MarketAxess, the largest electronic bond trading forum, which has seen the average monthly volume of bonds traded across its platform more than double since 2014 to nearly \$150bn in 2018. “There’s a secular trend towards more electronic trading globally,” says Rick McVey, the company’s chief executive.

Banks have also begun to automate smaller bond trades to free up traders for the bigger deals that still require a human touch. For example, Goldman Sachs’ “bond pricing engine” calculates values for 10,000 bonds every day, allowing its algorithms to handle smaller trades.

At first the “Goldman Sachs Algorithm” only handled trades below \$500,000, but today anything below \$2m “doesn’t get touched by a human”, according to Justin Gmelich, a senior executive at the investment bank. “In four-five years I wouldn’t be surprised if we have a lower trader headcount, and have more staff on the algorithmic side,” he adds.

## Radical change

Yet modernising bond market trading is just one aspect of a much broader, seismic shift. Even sceptics concede there is a panoply of other areas where modern data science and computing can deliver valuable improvements.

“People are focusing a lot on efficiency,” says Steve Zamsky, chief operating officer for fixed income at Morgan Stanley. “The conversation has been transformed from talking about electronic trading to increasing the efficiency of the ecosystem across the board.”

Take AllianceBernstein’s Abbie. Although primarily an order management algorithm built into the asset manager’s messaging system, its success in automating the humdrum work of sizing and organising trades has fed optimism that it will be able to perform more significant tasks. By combining Abbie with the bond pricing and trading platform Alfa and research platform Prism, AllianceBernstein hopes the combined trio can become a virtual fund manager.

“It’s only been two years that we’ve embraced the potential of technology, and what we’ve achieved in a short period of time is phenomenal,” says Jim Switzer, head of credit trading at AllianceBernstein. “The bond market is going to look radically different in three years’ time.”

Disruption is also coming to bank “syndication” desks, which arrange and sell new debt sales by companies and countries. The author Michael Lewis once described syndication desks as an “omniscient, omnipotent, omnivorous presence” on trading floors, but banks are working on new digital platforms to overhaul a process that has long consisted of phone calls, emails, instant messaging services and unwieldy spreadsheets to collect and collate the orders.

Even mobile phones are coming into play. JPMorgan surveyed more than 400 fixed income traders at investment

groups last autumn, and 61 per cent said they were “extremely” or “somewhat” likely to use a mobile trading app in 2018, up from 31 per cent the year before. “We want salespeople and traders focused on selling and trading, rather than spending time on the clunky bits we can automate,” says Guy America, head of credit trading at JPMorgan.

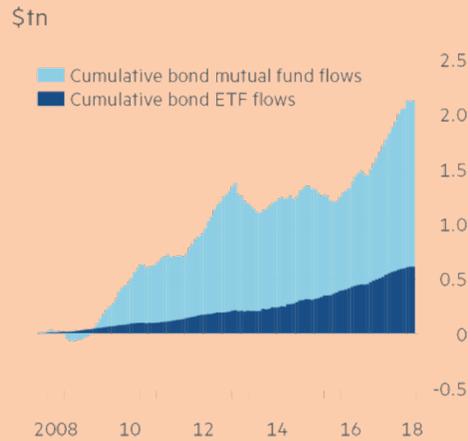
### Regulators take notice

Underscoring the sense of a tipping point, the US Securities and Exchange Commission last year established an advisory committee on fixed income’s market structure, made up of big money managers, exchanges, borrowers and bankers. This was a vital development, says Amar Kuchinad, head of strategy at Trumid, a new bond trading platform and one of the committee’s members.

“Regulatory attention was what really drove innovation in the equity market,” he says. “Evolution is a process. Sometimes it feels so slow that you don’t appreciate how much has changed [in fixed income] already.”

But the regulatory interest also highlights concerns over the evolving

### Fixed income funds enjoy roaring inflows but bond ETFs are on the rise



Source: EPFR Global

bond market. Technological disruption can often be painful, and lead to unwanted side-effects. As bond markets become faster and more algorithmic, they will also likely become more prone to the glitches that have plagued equity markets in recent years.

### Recommended

A vivid example of this came on October 15 2014, when the 10-year US Treasury bond yield suddenly tumbled and then roared higher again, a 37-basis point intraday move so sharp that in theory it should only be expected once every 1.6bn years.

The mayhem was enabled by the advent of faster, algorithmic traders in the US Treasury market who have stepped into the breach left by retreating banks. Similar “flash events” could become more prevalent across fixed income as automated trading becomes more widespread, the Bank for International Settlement said in a 2016 report.

“Given the importance of fixed income markets for the funding of the real economy and financial stability more broadly, policymakers have a strong interest in assessing how electronification may be affecting market quality,” the report said.

However, bankers and investors argue that yearning for the pre-crisis golden years of bond trading is pointless. “People inherently don’t like change, but some of these trends have taken root,” Mr Prager says. “We are not going back.”

### Reshaping the market Bond ETFs boosted by digital transition

One of the biggest disruptive forces in the bond market today is the rise of exchange traded funds — passive index-tracking vehicles that are already reshaping stock markets. Although bond ETFs are behind their equity counterparts in size and development, \$144bn has flowed into them over the past year. These allow investors to easily and efficiently trade entire baskets of bonds. This has both been enabled by and is accelerating a shift towards more algorithmic trading in the more liquid corners of the bond market.

Many investors and analysts have fretted that the mismatch between the seamless tradability promised by ETFs — which trade over electronic markets just like stocks — and the often patchy liquidity of the underlying instruments is a recipe for disaster.

However, proponents point out that bond ETFs have weathered several big tests in recent years and argue that they improve the fixed income market’s resilience. ETFs make bonds that are included more tradable. They also allow

banks to turn a basket of rarely-traded debts into a more liquid instrument through the “creation-redemption” process, where “authorised participants” — often banks — take the raw material of shares or bonds to make new ETF shares for investors to trade.

“The creation/redemption process for bond ETFs could become much more sophisticated, robust and fluid due to enhancements in technology and widespread acceptance of the vehicle,” BlackRock argued in a recent paper.

While there can be dislocations between the price of a bond ETF and its underlying instruments, there is a growing number of trading firms that can arbitrage the difference and thereby narrow it. And in extreme scenarios investors in a bond ETF can receive proportional slivers of the underlying debt.

Nonetheless, given the growth trajectory of bond ETFs, and development of ETFs that invest in increasingly illiquid debt, the concerns of critics are only going to intensify.

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